



KNOWLEDGE, ATTITUDE AND PRACTICE OF ANTIBIOTIC PRESCRIPTION AMONG DENTAL UNDERGRADUATE STUDENTS IN TAMILNADU - A CROSS SECTIONAL STUDY.

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ABSTRACT

Introduction: Antibiotics have been used in the management and treatment of infectious disease. It is, therefore, one of the most commonly prescribed, used, and misused drugs worldwide. This use, which could be indiscriminate has been viewed as a key factor for the emergence of antibiotic resistance. **Materials and Methods:** The study was a cross sectional online survey which were conducted to evaluate the knowledge, attitude and practice of antibiotic use among undergraduate students. A self administered questionnaire containing 16 items of questions which also included demographic details of students and knowledge, attitude and practice models of antibiotic use among undergraduate students. Totally 300 responses were collected from the students regarding to antimicrobial intervention. The data collected was entered into Microsoft excel 2010 and subjected to descriptive analysis for frequency and distribution. **Results:** The results of the study show that out of 300 responses 39.3% was from second years 23.6% was from the third years 18.6% was from the house surgeon 17.5% from final year undergraduate dental students. Thus, the overall survey regarding to knowledge, Attitude, prescription about antibiotic prescription and knowledge among the undergraduate dental students was sufficient but they lack in few entities towards the attitude in personalized antibiotic intake. **Conclusion:** The present study concluded that undergraduate dental students have adequate knowledge regarding antibiotic prescription, but there exist short coming in perception towards prescribing the right antibiotic at the right time with regards to antibiotic guidelines.

KEYWORDS : Antibiotics, Antibiotic resistance, Dental Students, Survey.

INTRODUCTION

Antibiotics have been used in the management and treatment of infectious disease. It is, therefore, one of the most commonly prescribed, used, and misused drugs worldwide. This use, which could be indiscriminate has been viewed as a key factor for the emergence of antibiotic resistance. Antibiotics are available without prescription and so individuals use it indiscriminately. General population should be instructed and educated and the health care providers should be told about antibiotic resistance and its dangerous consequences.

Antimicrobial resistance (AMR) is an on going threat to the modern medicine throughout the world with the negative effect on the patient treatment outcome. Pathogens are developing mechanisms of resistance, making it difficult to treat common infectious disease like pneumonia, tuberculosis and foodborne disease. Antibiotic prescribing is determined by various factors, including the socio-cultural and socio-economic factors of each country and the beliefs of patients and professional regarding the antibiotic use. In many developing countries, there is a shortage of many appropriate diagnostic tool, resulting in the unnecessary administration of antibiotic. It has also been observed that the insufficient regulatory policies of each country can cause an increase in over the counter antibiotics. The world Health Organisation has clearly emphasised the importance of adequate and effective training of medical students in the wise prescribing of Antibiotics

Globally, in recent years antibiotic resistance has become a major threat to public health. The consequence of inappropriate use or overuse of antibiotics results in emergence of resistant bacterial strains and unfavourable side effects. This in turn leads to addition of budget loads on the National health system.

A study conducted in UK has reported that 15% prescribe antibiotic on daily basis and 40% prescribe antibiotics on atleast three occasions. Another study has shown that the most common prescribed antibiotic for treating endodontic infections was amoxicillin-clavulanate. An essential part of dentists is prescribing appropriate drug including antibiotics, thus proper knowledge about drug safety, efficacy, convenience and cost is of significant value. Thus, dentists need to have absolute knowledge, information and recent

advancement about drugs and be mindful of international rules of drug prescription. Though there is evidential surge and expansion of antimicrobial resistance, but studies show dearth of appropriate knowledge in the dental community in this regard.

Antimicrobial resistance (AMR) is an ongoing threat to modern medicine throughout the world with a negative effect on patient treatment outcome. Pathogens are developing mechanisms of resistance, making it difficult to treat common infectious diseases like pneumonia, tuberculosis and foodborne diseases. In 2015, the WHO endorsed the Global Action Plan on Antimicrobial Resistance, which highlights the importance of training all healthcare professionals regarding AMS.

Thus, future Medical professionals have to be prepared appropriately in order to face the challenges of antimicrobial use in everyday clinical practice. Nowadays, medical education incorporates thorough knowledge of infectious diseases and diagnosis, as well as antibiotic utilization and pathogen resistance mechanisms.

The present study was conducted to evaluate the knowledge, attitude and practice among the dental undergraduate students towards antimicrobial usage. This study focuses on the aspects of antimicrobial resistance stewardship activities among dental undergraduates. Hence this could be an eye opener for undergraduate students to plan and proceed with the prescription of antibiotics to right patients with right dose at the right time.

The aim of the study is to access the knowledge, attitude and practice regarding antibiotic prescription among Dental undergraduate Students.

The objective of the study is to evaluate the knowledge of antibiotic prescription among dental students, to know the attitude of dental students in prescribing antibiotics and to access the practice of prescribing antibiotics.

MATERIALS AND METHOD

The study was a cross sectional online survey which were conducted to evaluate the knowledge, attitude and practice of antibiotic use among undergraduate students. The study was

conducted after the approval from institutional ethical committee. The procedure and purpose of the study was explained to the students and written consent was obtained individually through online declaration. Total number of 350 students participated in the study in which 282 responses were collected.

Questionnaire

A self-administered questionnaire containing 16 items of questions which also included demographic details of students and knowledge, attitude and practice models of antibiotic use among undergraduate students. A few questions were given in likert scale model and others were closed questionnaire questions. The questionnaire was tested for reliability and validity in which cronbachs alpha was determined to be (0.78) with good reliability and validity.

Data Collection

The pretested questionnaire was converted to google forms for ease distribution. The edited online version of the 16 item questionnaire was sent to approximately 350 undergraduate students from second year to house surgeons through online mode. Initially a week time was given to fill the questionnaire by the students in which only 150 responses were recorded. Hence a reminder message was sent to the students who have not participated and time period was extended for one more week. Finally, only 300 responses were collected from the students regarding to antimicrobial intervention. The data collected was entered into Microsoft excel 2010 and subjected to descriptive analysis for frequency and distribution.

RESULTS

The results of the study show that out of 300 responses 39.3% was from second years 23.6% was from the third years 18.6% was from the house surgeon 17.5% from final year undergraduate dental students.

Table 1: Questions Related to Assess the Knowledge Based on Antibiotics Use

S.NO	QUESTION	n	%
1	Usage of Antibiotics will speed up the recovery of the infectious disease	268	89.5
2	Awareness about Antibiotic drug resistance	258	85.9
3	Abuse of Antibiotic has become the main cause of antibiotic resistance	214	71.3
4	Abuse of antibiotics at present situation among prescribers	197	65.7
5	Lack of control in sale of antibiotics in pharmacies contribute for antibiotic resistance	177	58.9
6	Awareness about OTC sale	205	68.2

Table 1 denotes knowledge of the undergraduate students regarding to an antibiotic usage and resistance in which 89.5% of them responded that antibiotic will speed up the recovery of infectious disease. 85.9% of them are aware about the antibiotic drug resistance and 71.3% of them has realised the main cause of antibiotic resistance due to abuse of antibiotics. 65.7% of them say that abusing antibiotics are currently high among the prescribers. 58.9% of the responses denote that lack of control in the sale of antibiotics in pharmacies contribute for the resistance. And from the overall responses 68.2% of them were aware about the over-the-counter sale.

Table 2: Questions Based on Attitude Towards Antibiotic Usage

S.NO	QUESTION	n	%
1	Suspension of Antibiotics after the disease disappear	160	46.4
2	In favour of using multiple antibiotics for therapy	233	22.4

Table 2 denotes attitude towards the antibiotic usage in which attitude towards suspension of antibiotics as soon as the disease disappear was completely agreed by 46.4% by participants and 22.4% agreed to an extent and 34.2% of them disagreed completely. Attitude towards the effect of using multiple antibiotic therapy in reducing the disease was positive with 22.4% and was negative with 55.2%.

Table 3: Questions Based on Practice of Using Antibiotics

S.NO	QUESTION	n	%
1	Personalized intake of antibiotic without physician consultation	155	48.5
2	Saving the antibiotics for future use	177	41
3	Advising the patients not to reuse the previously prescribed antibiotics without the physician's opinion	40	86.7

Table 3 denotes practice of antibiotics to the community in which personalized intake of antibiotic without physician consultation was responded by 48.5% of the study participants and 41% of the study participants have the practice of saving the antibiotics for the future usage.

Among the study participants 86.7% have the practice of advising the patients not to reuse the previously prescribed antibiotics without the physician's opinion. Finally, the commonest antibiotic prescribed by the study participant was amoxicillin by 78.5% and penicillin by 15.8% and cephalosporin group by 5.7%. Thus, the overall survey regarding to knowledge, Attitude, prescription about antibiotic prescription and knowledge among the undergraduate dental students was sufficient but they lack in few entities towards the attitude in personalized antibiotic intake.

DISCUSSION

The essential part of physicians and dentists is prescribing appropriate drugs, thus, proper knowledge about drugs safety, efficacy, convenience, and cost is of significant value. Medically inappropriate, ineffective and economically inefficient use of the drugs occurs all over the world leading to antibiotic resistance and other serious consequences. Likewise, as per the study most of the dentist working in chitwan had knowledge about antibiotic resistance and its consequences. Antibiotic resistance in recent years has become a major threat worldwide. The present study exhibited that majority of the participants were acquainted with this. This was in line with the study conducted Gowri et al and Konde et al. In dental practice, antibiotics and analgesics are commonly used for infection control and management of pain. However, in dentistry conditions that need antibiotic therapy are mainly confined to oral infections aided by fever, lymphadenopathy and trismus. In certain situations such as acute periapical infection, dry socket, pulpitis and chronic inflammatory periodontal conditions antibiotics are not necessary whereas in acute periodontal conditions where drainage or debridement is not possible, antibiotics are prescribed. However, we observed that many dentists have consistently been prescribing antibiotics during infection, dry socket and pulpitis. About 75% of dental practitioners in our study has indicated antibiotics for periapical abscess which is in contrast to the study done in turkey this dissimilarity may be due to a number of factors ranging from inadequate knowledge to social factors, sample size, geographical difference. Self medication is a common practice in Nepal and most people do not take full course of drugs as advised by the physician. When they think the symptoms have subsided they store those medication for future. moreover, few studies have also documented the rise of antibiotic-resistance bacteria among farm animals and consumer meat and fish product. In the current review, our main goal was to reveal if and how medical students were taught the basic principles of AMS. Nowadays, we are living in an era of excessive and often

irrational usage of antibiotics in some settings, resulting in a significant increase in AMR. As this is an intercontinental issue, several studies conducted around the world give us valuable data for the preparation of future medical professionals. Our research has shown noteworthy findings regarding the knowledge, attitudes and perception of medical students.

Satisfactory responses towards attitude were increased in both the students. However, attitude towards self-use and irregular use of AMA was less in these students after intervention. Very casual attitude towards this aspect of AMA may be a contributory factor for the development of antibiotic resistance. Study done by Mahajan et al, describes similar findings amongst MBBS undergraduates. Same kind of lax attitude was also seen in other studies by Karandikar et al. , & Khan et al. , "3) Dyaret al. '11 and Minen et al. '8] This study revealed use of complete course of antibiotics prescribed by the doctor. Survey done in an Indian university by Virmani et al '19) observed similar finding amongst dental students (73. 1%), MBBS students (67. 4 %) but less in nursing students (31. 50%). Another study done by Dawnji et al. 20) amongst 2- year medical students reported the same finding in 84. 9% of participants. Mean practice score and satisfactory practice responses were improved. However, study done by Dutt et al '11 observed that practice score was less in medical than dental and nursing students about AMA use. Overall post-intervention score and satisfactory responses were improved but there is wide scope to improve the level of attitude and practice toward AMA use.

The recognition of AMR's severity is the major factor that will guide and assist professionals in searching for efficacious ways of fighting mild as well as more severe infectious diseases. Although most students assess that antimicrobial overuse and resistance are worldwide issues, they tend to underestimate that this problem also exists in their hospital environment. Such behaviors can lead to improper prescribing.

With all above-mentioned issues, we understand the need to enhance medical education towards AMS. The majority of students worldwide consider traditional lectures and passive learning tools ineffective methods or an unsuccessful way of promoting knowledge on antibiotics and AMS. Therefore, a more practical approach such as discussion of clinical scenarios and presence in clinical practice (e. g. , clinical placements, clinical rotations) seems to have a positive effect on knowledge of and attitude toward antibiotic usage and administration. In addition, a more detailed teaching of basic microbiology knowledge could reinforce medical students with important information, which is necessary for a better understanding of antibiotics. Another useful intervention would be cooperation between medical universities in order to exchange educational approaches, and also between medical schools and faculties like pharmacy schools (e. g. , interprofessional workshops and simulations between medical and pharmacy students), so they can learn more about the uses and specific features of antibiotics, by introducing principles and the importance of AMR.

Strength and Limitations of Study:

In this knowledge, attitude and practice study, it was limited only to the participants who were willing to participate in the study. Most of the students reported the responses in their own convenient time. The study was restricted only to evaluate the knowledge, attitude and practice of antibiotics use no intervention were provided. The strength of the study is adequate sample size focusing only on dental undergraduate students.

In this study, KAP about AMA of not only medical students but also dental students was collected and that to be before and

after intervention i. e. complete chemotherapy teaching. Both the medical and dental colleges were from the same University in the same campus. This was the greatest strength. Limitations of the study were that there were different faculty members in medical and dental colleges to teach chemotherapy. All the faculty members in medical college were MD (Pharmacology) but in dental college, they were M. Sc. (Pharmacology). Furthermore, most of the students were from Urban area. Hence, findings of this study may be considered to represent those of the urban population.

CONCLUSION

The present study concluded that undergraduate dental students have adequate knowledge regarding antibiotic prescription, but there exist short coming in perception towards prescribing the right antibiotic at the right time with regards to antibiotic guidelines. Therefore, with time the dental student should update them for betterment practice of antibiotic and also should be aware of antibiotic Stewardship to avoid resistance in the modern global era.